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CLINICAL CONTRIBUTIONS TO OTOLOGY

BY*

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CASE I.—*Binaural deafness, probably due to simultaneous exudations into both labyrinths.*

Joseph R., æt. 40, came under observation December 14, 1874. The following letter which he brought with him from his family physician, Dr. John Messenger, contains important facts in the history of his case.

"The patient, Mr. J. R., came to consult me July 6, 1874. He was then, and had been, living on Eightieth Street, a little west of Broadway, in a frame house, rather old, and surrounded with a growth of shrubbery, fruit-trees, vegetable garden, etc. He and his family had resided there for several years, and all had had good health up to the time when Mr. R. was attacked (July, 1874) with a severe ringing sound in the ears, which came on suddenly without pain or severe general or local distress. There was quite a severe nervous derangement, if I may so term it. He was very weak and depressed. Deafness, almost total, was a symptom from the first. A loud and rather base sound was not heard as well as a sound of high or acute pitch. The shutting of a door, or something falling on the floor and making a shrill noise would startle him, and make him start up in a fright. A very careful survey of his person, ocular inspection, palpation, auscultation, analysis of the urine, chemical and microscopical, the constant and interrupted currents of the faradic and galvanic batteries, all failed to indicate the locality of any diseased structure. Malaria came in for a share in the cause of the trouble, but there, too, I failed in my efforts to convict the offender. He is a man of good, temperate, regular habits, and always has been so."

Mr. R. gave me the following account of the way in which his trouble was ushered in. About the first of July, while riding down Broadway in a horse-car, he thought he heard a fire-bell ringing, and said so to his wife. She replied that she heard nothing of the kind. Presently he heard the bells ringing again, but as his wife did not hear them he was forced to the conclusion that the sounds originated in his own ears.

These sounds, with many variations, have persisted in the most distressing and annoying manner ever since. During the summer, while sitting in his garden, noises of bats, owls, and frogs were repeated in his ears. Again the most furious steam-pumping sounds would be heard.

The hearing of both ears was impaired from the first, but he was able to hear conversation for several months. The hearing of the right ear was very gradually lost first, and that of the left went in the same way a few weeks later. He had been unable to understand spoken words for three or four weeks when he first came under our observation. He never lost the power of hearing certain external sounds, such as his parrot saying "cuckoo." He is very nervous, certain noises going through him like an electric shock. His voice is somewhat raised in pitch, and not under good control. The tuning-fork is heard very faintly when placed in contact with his teeth. So far as could be determined by inspection his external and middle ears were normal. His Eustachian tubes were easily opened.

It was believed that the symptoms pointed to disease of both labyrinths, the result, perhaps, of some obscure intracranial disease. An unfavorable prognosis was given, and the patient was placed upon a mixture containing iodide of potassium, bromide of potassium, bromide of ammonium, and sesquicarbonate of ammonia. Mercurial inunction was also used, and was carried to the point of slightly touching his gums. He was afterward treated with increasing doses of nitrate of strychnia, administered hypodermically, and by large doses of quinine. Electricity was applied to his Eustachian tubes and external auditory canals, both constant and interrupted currents, but all without appreciable effects.

On January 4, 1875, I tested his hearing with my watch and was surprised to find that he could hear it with his right ear at a distance of six inches ($\frac{6}{60}$), and with his left at eight inches ($\frac{8}{60}$). I repeated this test at different visits afterward, and found that his power of hearing the ticking of my watch varied, the farthest

point at which he heard it any time being fifteen inches ($\frac{15}{60}$). The test of his power to hear the watch was repeated and confirmed by Dr. Agnew.

We saw Mr. R. again more than a year afterward (March 15, 1876). He said that in about a month after the date of his last visit the subjective noises almost entirely disappeared, and that since that time he has been free from tinnitus, except during mental excitement, when he hears one, two, or three sounds like the blows of a hammer. The stronger the excitement the longer these sounds continue. He hears the watch pressed against the right ear, and at a distance of two inches from the left ear. He hears the sound of his own voice and controls it better than when I first saw him. He says he has had much domestic trouble since he stopped treatment, and has used tea, coffee, and beer freely, and to this he attributes his not hearing the watch so well as formerly. We placed him near a piano, with his eyes closed, and struck all the keys in succession. He heard a sound when *a* and *d* in the highest octave, *f* in the lowest octave, and *f* in the next to the lowest octave were struck, but not every time. He counted correctly every time the strokes on a tumbler with the back of a jack-knife blade, with his back turned, at a distance of twenty feet.

Mr. R. states that he had a fall on his head during the fire at the Fifth Avenue Theatre, about a year before his ear trouble set in, but he does not think that was the cause of it. His residence was in a malarious district, but he thinks his deafness may be more directly due to his long and arduous labors in a new and damp painting-room, where he frequently spent fifty hours without intermission.

This patient never had venereal disease of any kind. It will be noticed that he at no time suffered from vomiting or from vertigo. It seems extremely improbable that the disease began in his ear drums. An attack of otitis media so sudden as this, and severe enough to produce such damaging results, could scarcely occur without pain, more or less severe, and this patient never had an earache, and not even well-marked headache, his main symptom, aside from deafness and tinnitus, being intense nervous irritability. Moreover, his drum-heads were normal, on inspection, when we first saw him, nearly six months after the disease was ushered in. There can be little, if any, doubt, then,

that it was an affection of both internal ears. Perhaps we may be permitted to go a step further, and venture to express an opinion as to the character of this affection. All the symptoms in the case would be accounted for by the hypothesis of a simultaneous hemorrhage, or a simultaneous exudation, occurring in both labyrinths. Reported cases of hemorrhage into both labyrinths have usually, if not always, been the results of traumatism, as falls or blows upon the head. But we see no reason why apoplexies may not occur in both labyrinths as well as in both retinæ simultaneously, and we do occasionally meet with cases of the latter without any assignable cause save changes in the walls of the blood-vessels. But in the case reported above, the theory of a labyrinthine exudation seems to me the more probable one. Mr. R. seems to have been surrounded by the most favorable circumstances for "taking cold." May he not have "caught cold" in that "new and damp painting-room where he frequently spent fifty hours without intermission"; and may not that "cold," which in one man would have produced a pneumonia, and in another an otitis media, have produced in Mr. R. an inflammation of his auditory nerves, or an "otitis labyrinthica" of both sides?

The fact that the patient could hear the watch readily at a distance of several inches while totally deaf to conversation is very remarkable, and we can only explain it by supposing that the exudations which occurred in both labyrinths were plastic rather than serous, and produced pressure upon certain areas of the terminal fibres of the auditory nerve, while other portions were left comparatively free from pressure.

CASE 2.—Wound of the membrana tympani by an oak stub.

Dec. 21, 1875. C., æt 36, stated that four days ago, while out hunting, in the act of mounting a fence, he fell and thrust an oak stub into his right ear. Slight bleeding occurred, with immediate deafness. A bloody discharge soon occurred, with deep pain in and around the injured ear. The hearing distance is now: watch, right ear, 8 inches; left ear, 16 inches. The tuning-fork placed on the forehead is heard more distinctly in the right ear.

Inspection shows an opening through the membrana tympani below the end of the handle of the malleus.

Some pieces of bark and dirt were washed out of the ear by syringing with warm water. The middle ear was gently inflated three times a week by Politzer's method, and in the course of three weeks the perforation healed with little or no impairment of hearing.

CASE 3.—Double rupture of the membrana tympani from a blow.

Jan. 27, 1875. Mrs. N. H., æt 37, says that four days ago she received a blow of an open hand on her left ear. A noise like the roaring of the sea came on immediately, and has continued ever since, but is gradually growing less distinct. She has had absolutely no pain in the ear since that passed away which was the immediate effect of the blow, and she has not noticed any deafness. There has been no discharge from the ear. Her hearing for the watch was found to be acute and equal in both ears, nor was there any difference in the ears by the tuning-fork test.

Upon looking into the injured ear we found that there were two ruptures of the drum-head distinctly visible. One was situated in front of the handle of the malleus, was nearly parallel with it, and extended about two thirds of its length. The other extended from the end of the handle horizontally backward nearly to the periphery of the membrane. The air passed through both these openings readily when the ears were inflated by Val-salva's method. The drum-head was reddened and slightly swollen.

The patient was treated on the expectant plan, nothing being applied except, on one or two occasions, the warm aural douche to allay irritation, and the ruptures healed in the course of a fortnight, leaving almost invisible cicatrices. When the patient was last seen the hearing was unimpaired and the roaring had entirely passed away.

CASE 4.—Supposed foreign body in the tympanum.

August 5, 1874. C. G., æt. 3, came to his mother five days ago and asked for a pin, saying he had got a stone in his ear which caused pain. There was some dirt seen in the meatus. His father passed a darning-needle and "sounded" the external auditory canal and "struck something." The child was then taken to the office of Dr. D., who syringed the ear with warm water and got out some earthy matter, after which he introduced a blunt probe and felt a substance low down in the canal, filling the cavity so that he

could not pass the probe beyond it. It sounded "gritty." He then placed the child under ether and tried to pry it out. He did get hold of it, but could not pull it out with his forceps. The child was then taken to Dr. E., who probed the ear, used the ear-spoon and ear-forceps without extracting the foreign body. Yesterday morning he gave an anæsthetic and broke away a piece of bone, but still failed to remove the foreign body. Some paresis of the seventh nerve occurred early in the manipulations. Examination now shows what seems to be a foreign body pushed through the membrana tympani and stuck immovably in the middle ear.

We syringed the ear freely and then advised to desist from further active interference as a choice of evils, believing that we could not remove the supposed foreign body by any means that we were willing to employ, and hoping that at a later stage the discharges might dislodge it. Indeed, the parts were so altered by the lacerations occasioned by the attempts to remove the supposed foreign body that we could not say positively that any existed in the middle ear, but feared that the bony wall of the middle ear had been so denuded and broken as to beget the appearance of a foreign body.

In this connection it may be well for us to say what we believe to be the proper line of treatment to be pursued in such cases. When a foreign body is lodged in the external auditory canal the first means to resort to for its removal is syringing with warm water. We should use for this purpose a syringe having a large barrel and small nozzle, and endeavor to throw the stream of water not against the foreign body but the wall of the canal, so as to press past the foreign body and thus to discharge it by the recoil of the water.

If syringing does not discharge the foreign body the patient should be put profoundly under ether and very careful attempts made by the use of instruments to accomplish the object. A very thin steel scoop, or the Daviel spoon, is the best instrument for the purpose, and this should be gently insinuated between the foreign body and the wall of the meatus, while the body is held by a hook, like the cystotome used in cataract extraction, from pressing inward against the drum membrane.

If bleeding occurs time must be allowed for it to cease, otherwise the proper direction of instruments cannot be preserved.

It is possible, also, to pass a delicate sickle-shaped knife down through the skin of the meatus, past the foreign body, and use it as a vectis after its point shall have been passed beyond the foreign body, care being exercised not to push the body deeper into the canal. No one, however, should attempt such operations unless he is familiar with the anatomy of the parts, and understands the methods of examining the ear sufficiently well to *see the foreign body* he is attempting to extract.

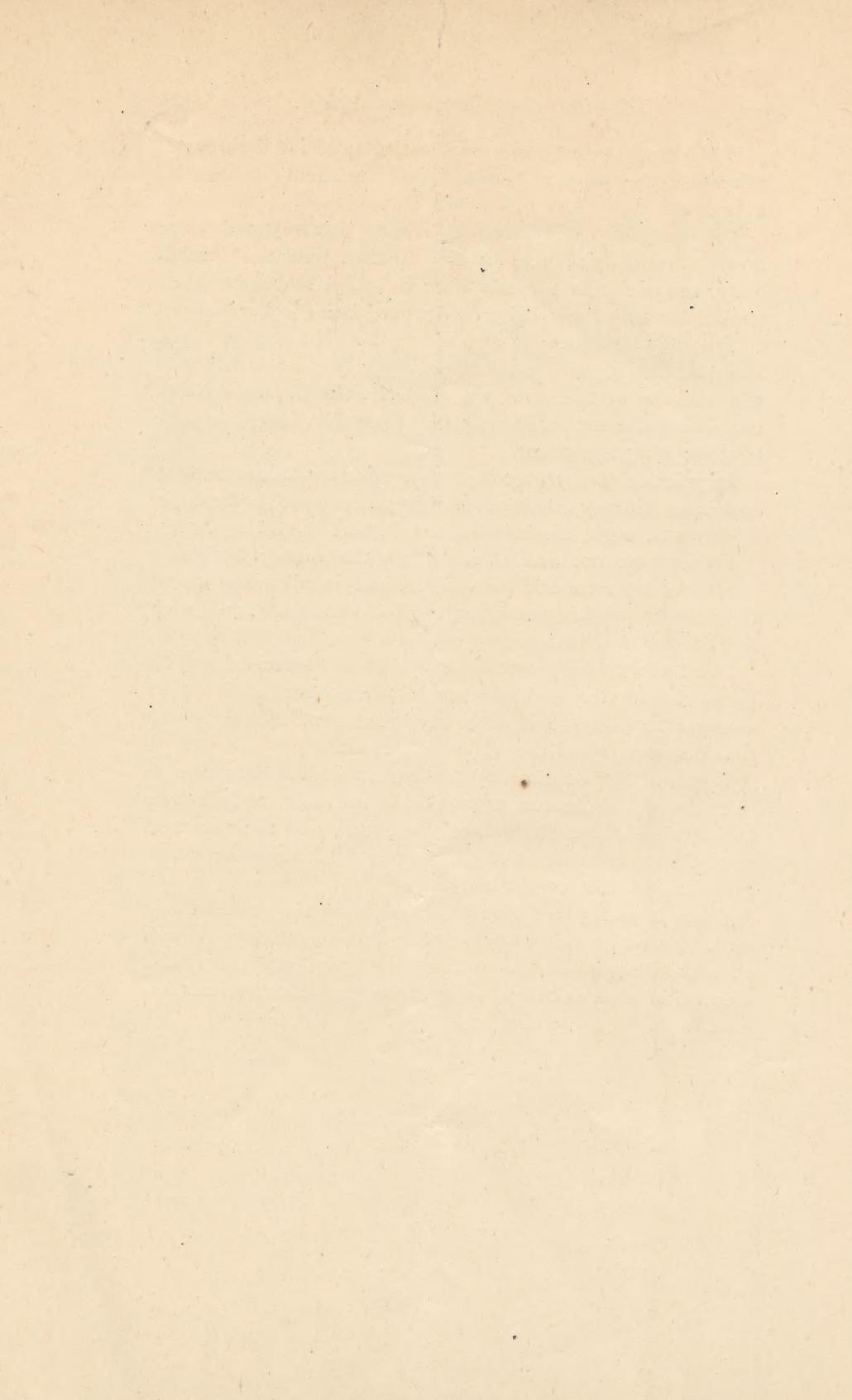
In practice, the syringe is usually effective unless meddlesome and clumsy interference has pushed the body down upon, or through, the membrana tympani.

Forceps are not available. When the foreign body fills the canal they cannot be applied, and in all cases where they can be applied the syringe will do the work, and with less danger to the organ.

In all cases the greatest care must be exercised not to press the foreign body deeper into the canal, and not to attempt to dislodge it with any instrument that does not pass between it and the wall of the canal.

No harm can be done by passing an instrument through the skin of the meatus, provided the operator really knows the depth of the canal and, by the exercise of the "learned touch," can tell when the distal end of his instrument has gone beyond the foreign body.

Cases 2 and 3 are given, not because they exhibit any striking novelty, but because their histories seem to prove that the best results in practice are often reached by the absence of what is called, and very properly, *active interference*.



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